

Amendment and Response

Applicant: Willard Charles Raymond

Serial No.: 10/622,850

Filed: July 18, 2003

Docket No.: A126.116.102

Title: ADJUSTABLE WAFER ALIGNMENT ARM

REMARKS

The following remarks are made in response to the Final Office Action mailed March 30, 2006. In the Final Office Action, claims 1, 3-7, and 18 were rejected under 35 U.S.C. § 102(b) as anticipated by Fuke et al., U.S. Patent No. 6,062,795 ("Fuke"), and claims 2, 8, and 9 were rejected under 35 U.S.C. § 103(a) as unpatentable over Fuke. In addition, claims 1-10 and 14-20 were rejected under 35 U.S.C. § 103(a) as unpatentable over Fuke in view of Nakamura, U.S. Patent No. 6,236,904 ("Nakamura"), and claims 11-13 were rejected under 35 U.S.C. § 103(a) as unpatentable over Fuke in view of Nakamura as applied to claim 10 above, and further in view of Aoki et al., U.S. Patent No. 5,520,276 ("Aoki").

With this Response, claims 1, 3-4, 6, 8, 10, and 18 have been amended, and claim 5 has been cancelled. Claims 1-4 and 6-20 remain pending in the application and are presented for consideration and allowance.

35 U.S.C. §§ 102 and 103 Rejections

Claims 1, 3-7, and 18 were rejected under 35 U.S.C. §102(b) as anticipated by Fuke.

Fuke teaches at column 2, lines 12-25 a wafer ring feeding apparatus including a cassette 10 that is raised and lowered by an elevator 13, and a wafer ring guide means 80 including a pair of guide rails 86A and 86B. The guide rails 86A and 86B guide a wafer ring 1 from the cassette 10 to a pellet pick-up device 20.

With reference to FIGS. 4(a)-4(c), Fuke teaches that the wafer ring guide means 80 includes a frame body 81 that is erected on a base plate 21 and positioned between the cassette 10 and the pellet pick-up device 20. Significantly, the frame body 81 is fixed to the base plate 21 between the cassette 10 and the pellet pick-up device 20. A slide shaft 82 is supported by the frame body 81, and a guide rail driver supporting plate 83 is fastened to a central portion of the shaft 82 between supporting plates 85A and

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85B (See FIG. 4(c)). In this regard, a guide rod 84 is fastened to the plate 83 parallel to the shaft 82, and the supporting plates 85A and 85B are fitted over the shaft 82 and guide rod 84.

With the above structure in mind, Fuke teaches at column 4, lines 46-56 that guide rail supporting plates 85A and 85B are positioned on both sides of supporting plate 83 and slidable upon the shaft 82 and guide rod 84. Fuke teaches that the guide rails 86A and 86B include conveying surfaces 86a and 86b (FIG. 4(c)). As best illustrated in FIG. 4(a) and FIG. 4(c), the guide rails 86A and conveying surfaces 86a, for example, appear to be formed from a single piece of material, such as sheet metal. In this regard, each of the guide rails 86A, 86B and the conveying surface 86a, 86b, respectively, appear to be formed sheet metal guides (See FIG. 4(a)).

The Examiner takes the position at page 2, item 2 that since the frame support taught in Fuke has at least some vertical adjustability, it is considered to be adapted to be vertically adjustable relative to the cassette 10. In addition, the Examiner takes the position that Fuke teaches opposing support arms in the form of supporting plates 85A and 85B, that each contain a plurality of contact elements 86A, 86B, 86a and 86b. Applicant respectfully distinguishes the pending claimed subject matter from Fuke as detailed below.

With this Response, independent claim 1 has been amended to provide a frame support including opposing support arms, each support arm including a first contact element and a second contact element spaced apart from the first contact element, where the frame support is vertically movable across a plurality of slots of a loaded cassette for selective alignment with each of the slots, respectively.

Support for the language of amended independent claim 1 can be found throughout the specification, and in particular at page 5, lines 10-14, and FIGS. 1 and 2, where it is disclosed that contact elements are slightly spaced from one another and are positioned to support a film frame and compensate for horizontal misalignment of the film frame.

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Fuke fails to teach or suggest opposing support arms, where support arm includes a first contact element and a second contact element spaced apart from the first contact element, where the frame support is vertically movable across a plurality of slots of a loaded cassette for selected alignment with each of the slots, as required by amended independent claim 1. It is respectfully requested that the rejections to claims 1, 3-7, and 18 under 35 U.S.C. § 102(b) over Fuke be withdrawn.

Claims 2, 8, and 9 were rejected under 35 U.S.C. §103(a) as unpatentable over Fuke. Claims 2, 8 and 9 depend from amended independent claim 1. It is believed that amended independent claim 1 is non-obvious under 35 U.S.C. § 103, such that all claims depending therefrom are also non-obvious. MPEP § 2143.03. It is respectfully requested that the rejections to claims 2, 8, and 9 under 35 U.S.C. §103(a) as unpatentable over Fuke be withdrawn.

Claims 1-10 and 14-20 were rejected under 35 U.S.C. § 103(a) as unpatentable over Fuke in view of Nakamura.

The Examiner concedes at page 4 of the Final Office Action mailed March 30, 2006 that Fuke does not show moving the frame support linearly vertically relative to the cassette. However, the Examiner asserts that Nakamura teaches a system for conveying flat articles in and out of a cassette that teaches a stationary cassette and a vertically movable support 7. (The Examiner references Nakamura at FIGS. 4-5). Applicant respectfully submits that a *prima facie* case of obviousness cannot be established over Fuke in view of Nakamura, as set forth below.

Nakamura teaches a conveying system that conveys a substrate into and out of a carrier 8, where the system accommodates for a calculated amount of flexure of the substrate that can potentially affect placement of the substrate into slots of the carrier 8. For example, Nakamura at column 3, line 59 to column 4, line 13 teaches that the system includes a support pillar 1, a fixed supporting wafer hand 2 extending from the pillar 1, a connection 4 for connecting the pillar 1 to a scan guide 12, and a light sensor 9 and receiver 10 for detecting a position of the wafer 3.

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The sensor 9 and receiver 10 are employed to calculate a flex in the wafer substrate, and a driver 5 adjusts a location of the carrier 8 to accommodate placement of the flexed wafer substrate into the carrier 8. In the embodiment illustrated in FIG. 1, Nakamura teaches that wafer hand 2 is fixedly supported to the support pillar 1 (column 3, line 65). Nakamura teaches at column 5, lines 56-65 another embodiment that includes a moving means 11 coupled to pillar 1 to move the hand 2 relative to the carrier 8 (See FIG. 4).

The Examiner takes the position that it would have been obvious for one of ordinary skill in the art at the time of the invention to modify Fuke to include a vertically moving frame support as taught by Nakamura, and asserts that this is an alternative and equivalent means of performing the same function. Applicant respectfully disagrees.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation to modify or combine the reference teachings. Second, there must exist a reasonable expectation of success. Third, the references must teach or suggest all of the claim limitations. MPEP § 2143.

Nothing in either of cited references provide support for modifying the fixed guide means 80 taught by Fuke to be movable. Note that Fuke teaches at column 4, beginning at line 35 that the frame body 81 is erected onto base plate 21 to be between the cassette 10 and the pick-up device 20, and with reference to FIG. 2, all of the sensing/measuring components, including XY table 22, are attached to and reference the base plate 21. In other words, the movable cassette 10 is uncoupled from the reference frame of the base plate 21. In this manner, Fuke is able to "correct the rotational orientation and/or offset of the wafer ring." (Abstract).

Based on this, Applicant respectfully submits that no suggestion or motivation exists to modify the system in Fuke to include the vertically movable arm taught in Nakamura. Note that the vertically movable arm taught in Nakamura (and shown in FIG. 4) likewise uncouples the moving arm 2 from the fixed sensors 25, 26. Thus, the

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purported combination would require Fuke to modify the frame 81 to be movable relative to the cassette 10, which would necessitate that the wafer ring guide means 80 would also move relative to the moving frame 81, all of which is likely to disrupt the desired "correct the rotational orientation and/or offset of the wafer ring."

In this regard, Applicant respectfully notes that the prior art must provide a motivation or reason for the worker in the art, without the benefit of Appellant's Specification, to make the necessary changes in the reference device. *Ex parte Rawhide Mfg. Co.*, 223 U.S.P.Q. 351, 353 (Bd. of Pat. App. & Inter. 1984). It is believed that no such motivation exists.

In addition, modifying the guide means 80 taught by Fuke to be vertically movable as taught by Nakamura would render the guide means 80 unsuitable for its intended guiding purpose. For example, Fuke teaches at column 4, lines 33-37 that the frame body 81 of the guide means 80 is erected onto the base plate 21 between the cassette 10 and the pellet pick-up device 20. In addition, Fuke teaches at column 3, lines 10-20 that the pellet pick-up device 20 is mounted to an XY table that is also installed onto the base plate 21. In this manner, a relative position is maintained between the guide means 80 and the pellet pick-up device 20 as they are both mounted onto the base plate 21. Modifying the guide means 80 taught in Fuke to be vertically movable would uncouple the fixed relation that the guide means 80 and the pellet pick-up device 20 share with the base plate 21. This additional degree of freedom in the guide means 80 would introduce at least some error in the location of the wafer ring, which would affect the movement of the wafer ring between the cassette 10 and the pick-up device 20.

With regard to claims 1-9, neither of the cited references teach or suggest opposing support arms, where support arm includes a first contact element and a second contact element spaced apart from the first contact element, where the frame support is vertically movable across a plurality of slots of a loaded cassette for selected alignment with each of the slots, as required by amended independent claim 1.

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With regard to claims 10 and 14-20, with this Response independent claim 10 has been amended to provide a method of handling a film frame maintaining a wafer relative to a cassette, the method including providing a handling system including a load port, a robot end effector and a vertically adjustable frame support having opposing support arms, each support arm including a plurality of spaced apart contact elements. Neither of the cited references teach or suggest opposing support arms, where each support arm includes a plurality of spaced apart contact elements, as required by amended independent claim 10.

For at least the reasons given above, it is believed that a *prima facie* case of obviousness cannot be established over Fuke in view of Nakamura. It is respectfully requested that the rejections to claims 1-10 and 14-20 under 35 U.S.C. § 103(a) as unpatentable over Fuke in view of Nakamura be withdrawn.

Claims 11-13 were rejected under 35 U.S.C. § 103(a) as unpatentable over Fuke in view of Nakamura, as applied to claim 10 above, and further in view of Aoki. The Examiner asserts that Aoki shows that it is known to horizontally adjust guide rails in response to a determined width of different sizes of lead frames.

For the reasons provided above, it is believed that a *prima facie* case of obviousness cannot be established over the cited references. In particular, since it is believed that amended independent claim 10 is non-obvious under 35 U.S.C. § 103, claims 11-13 that depend from amended independent claim 10 must also therefore be non-obvious. MPEP § 2143.03.

CONCLUSION

In view of the above, Applicant respectfully submits that pending claims 1-4 and 6-20 recite patentable subject matter, are in form for allowance, and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 1-4 and 6-20 is respectfully requested.

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No fees are required under 37 C.F.R. 1.16(b)(c) for the addition of claims. However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 50-0471.

The Examiner is invited to telephone the Applicant's representative at the below-listed number to facilitate prosecution of this application.

Any inquiry regarding this Amendment and Response should be directed to Timothy A. Czaja at Telephone No. (612) 573-2004, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

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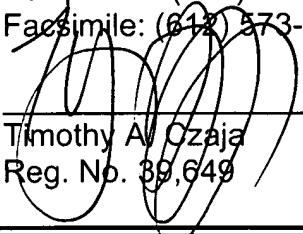
Respectfully submitted,

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CERTIFICATE UNDER 37 C.F.R. 1.8:

The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 5th day of June, 2006

By: Name: Timothy A. Czaja